

WHAT IS CLAIMED IS:

1. A method for forming a two-dimensional array of Lead-Salt detector elements monolithically on an integrated circuit, the method comprising:

5 providing an integrated circuit having a passivation layer covering a plurality of electrical contacts;

depositing a Lead-Salt layer upon the passivation layer, the Lead-Salt layer having a first surface adjacent the passivation layer and a second surface opposite the first surface;

10 delineating the Lead-Salt layer into a plurality of detector elements;

creating vias through the passivation layer to the electrical contacts;

forming electrical couplings between the electrical contacts and the detector elements; and

sensitizing the Lead-Salt layer.

15 2. The method of Claim 1, wherein the passivation layer comprises Silicon Dioxide.

3. The method of Claim 1, wherein the electrical couplings comprise Gold.

20 4. The method of Claim 1, wherein the pitch of the detector elements is less than approximately thirty microns.

5. The method of Claim 1, further comprising:
depositing a conductive material upon the passivation layer before depositing
the Lead-Salt layer; and

5 patterning the conductive material to form a plurality of detector element
contacts and a common grid for the detector elements;

wherein forming electrical couplings between the electrical contacts and the
detector elements comprises producing electrical couplers between the electrical
contacts and the detector element contacts.

10 6. The method of Claim 5, wherein the conductive material comprises
Titanium-Gold.

15 7. The method of Claim 5, wherein the electrical couplers couple the
electrical contacts to the detector element contacts by overlaying at least part of the
detector element contacts.

20 8. The method of Claim 5, wherein the electrical couplers couples the
electrical contacts to the detector elements by overlaying at least part of the detector
element contacts and at least part of the second surface of the detector elements.

25 9. The method of Claim 1, wherein forming electrical couplers between
the electrical contacts and the detector elements comprises producing electrical
coupler between the electrical contacts and at least part of the second surface of the
detector elements.

10. The method of Claim 1, wherein the Lead-Salt comprises Lead
Selenide.

30 11. The method of Claim 1, further comprising texturing the passivation
layer before depositing the Lead-Salt layer.

12. The method of Claim 11, wherein texturing the passivation layer comprises ion milling the passivation layer.

13. The method of Claim 1, further comprising applying a textured coating
5 to the passivation layer before depositing the Lead-Salt layer.

14. The method of Claim 1, further comprising depositing a passivation layer over the Lead-Salt layer.

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

15. A two-dimensional array of Lead-Salt detector elements monolithically formed on an integrated circuit, the system comprising:

an integrated circuit comprising a passivation layer and a plurality of electrical contacts, the passivation layer having vias to the electrical contacts;

5 a delineated, sensitized Lead-Salt layer formed upon the passivation layer, the delineations forming a plurality of detector elements; and

electrical couplers formed between the electrical contacts and the detector elements.

10 16. The system of Claim 15, wherein the passivation layer comprises Silicon Dioxide.

17. The system of Claim 15, wherein the electrical couplers comprise Gold.

15 18. The system of Claim 15, wherein the pitch of the detector elements is less than approximately thirty microns.

20 19. The system of Claim 15, further comprising a conductive material upon the passivation layer and underlying part of the Lead-Salt layer, the conductive material forming a plurality of detector element contacts and a common grid for the detector elements, wherein the electrical couplers between the electrical contacts and the detector elements comprise electrical couplers between the electrical contacts and the detector element contacts.

25 20. The system of Claim 19, wherein the conductive material comprises Titanium-Gold.

30 21. The system of Claim 19, wherein the electrical couplers overlay at least part of the detector element contacts.

22. The system of Claim 19, wherein the electrical couplers overlay at least part of the detector element contacts and the detector elements.

23. The system of Claim 15, wherein the electrical couplers overlay at least part of the detector elements.

24. The system of Claim 15, wherein the Lead-Salt comprises Lead Selenide.

25. The system of Claim 15, wherein the passivation layer is texturized.

26. The system of Claim 15, further comprising a textured coating between the passivation layer and the Lead-Salt layer.

27. The system of Claim 15, further comprising a passivation layer over the Lead-Salt layer.

28. A two-dimensional array of Lead-Salt detector elements monolithically mounted on an integrated circuit, the system comprising:

an integrated circuit comprising a passivation layer covering a plurality of electrical contacts, the passivation layer having vias to the electrical contacts;;

5 a conductive material upon the passivation layer, the conductive material forming a plurality of detector element contacts and a common grid for the detector;

a delineated, sensitized Lead-Sulfide layer formed upon the passivation layer and part of the conductive material, the delineations forming a plurality of detector elements having a pitch of less than approximately thirty microns; and

10 electrical couplers formed between the electrical contacts and the detector element contacts.

29. The system of Claim 28, wherein the electrical couplers overlay the detector element contacts and the detector elements.

30. A two-dimensional array of Lead-Salt detector elements monolithically mounted on an integrated circuit, the system comprising:

an integrated circuit comprising a passivation layer covering a plurality of electrical contacts, the passivation layer having vias to the electrical contacts;

5 a textured coating upon the passivation layer;

a delineated, sensitized Lead-Selenide layer formed upon the textured coating, the delineations forming a plurality of detector elements having a pitch of less than approximately thirty microns; and

10 electrical couplers formed between the electrical contacts and the detector elements.

31. An infrared sensor comprising:

optics; and

a two-dimensional array of Lead-Salt detector elements monolithically formed on an integrated circuit, the system comprising:

5 an integrated circuit comprising a passivation layer and a plurality of electrical contacts, the passivation layer having vias to the electrical contacts;

a delineated, sensitized Lead-Salt layer upon the passivation layer, the delineations forming a plurality of detector elements; and

10 electrical couplers between the electrical contacts and the detector elements.